

**FEDERAL AVIATION ADMINISTRATION**  
**METADATA REPOSITORY REQUIREMENTS DOCUMENT**

**Version 1.0**



**Prepared by the:**  
**Information Management Division**  
**Office of Information Services and Chief Information Officer (AIO)**

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# METADATA REPOSITORY REQUIREMENTS DOCUMENT

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## 1 Introduction

### 1.1 System Overview

The Federal Aviation Administration (FAA) spends approximately \$2.1B<sup>1</sup> annually on Information Technology (IT)<sup>2</sup>. The storage, retrieval, and movement of data is at the core of IT. Accordingly, the development and maintenance of data represents a substantial investment. In addition, future aviation depends upon modernized and highly unified services to maintain safe, secure, and efficient flight in the face of expected growth. Increasingly the FAA and almost all other enterprises rely on IT products and services to meet current and future business needs. There is also an increasing need to share information internally within the Lines of Business (LOB) and externally with domestic air carriers, international civil aviation administrations, Congress, and the flying public. Various LOB's have undertaken the development of data management programs to consolidate, standardize, and increase accessibility to their data. For example, there is an ongoing shift in NAS data management in the FAA from single Host-based, single Center-based operations to a multi-Center, Command Center, and multi-system operations for National Airspace System (NAS) and NAS-Support users. In addition there is an increasing demand for data sharing and reuse to facilitate organizational change such as implementing a Cost Accounting System (CAS). Future database and related system development will depend upon optimized and coordinated data. Finally, as a part of recent Federal critical infrastructure initiatives (Presidential Decision Directive (PDD) 63), the FAA is placing increased emphasis on information security. For these reasons and others the information assets of the agency must be positioned corporately through the use of common agreed upon business and technical metadata from an agency-wide perspective.

The FAA Information Technology Strategy and Data Management Strategy provide the guiding principles and framework for implementing a corporate data management program. A key enabling component for information technology and of the data management program is the establishment of an enterprise-class Metadata Repository (MDR).

Metadata is information about data. A metadata repository is an asset and inventory database that tracks and manages the information about the applications and databases that have been developed for the business. A metadata repository can substantially help organizations coordinate and support the applications and databases, which in turn support the business. A metadata repository catalogs business and technical metadata, business rules, data ownership, and other information about the agency's data. It provides the necessary foundation or infrastructure for an effective data management program.

One of the goals in the Information Technology Strategy is focused on information. It states the information goal as "making reliable information available quickly". A further breakdown of the

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<sup>1</sup> *FAA Information Technology 5 Year Plan, July 1999*

<sup>2</sup> Definition of Information Technology provided by the *FAA Information Technology Strategy, FY2000 - FY2002*; <http://www.faa.gov/aio>, which used the definition of IT from the *Information Technology Management Reform Act*, dated February 10, 1996 (aka Clinger/Cohen Act), Section 5002 (3); [http://www.cio.gov/docs/s1124\\_en.htm](http://www.cio.gov/docs/s1124_en.htm)

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goal lists the objectives of the goal in terms of improved accountability, quality, and access to information. Another goal in the strategy focuses on security and has the goal of safeguarding information assets. A metadata repository enables effective information management, information security, and other goals listed in the Information Technology Strategy.

The Data Management Strategy was developed with the cooperation of the LOBs to help guide and focus the data management efforts within the agency. One of the main objectives listed in the strategy is the development of an agency database inventory and metadata repository. Through the use of an inventory and repository the agency can establish policies and information standards that allow for data standardization, sharing, and reuse.

## 1.2 Scope

The scope of the metadata repository is all agency metadata. Agency metadata includes operational and administrative systems whose data are stored and used to provide agency services. The focus initially will be on metadata for the database inventory called for in the Data Management Strategy. Additionally the focus will be on metadata for selected agency functional areas to initially populate the repository. The system will look to leverage and enable reuse of existing metadata resources and to help reduce duplication wherever practical.

The metadata in the repository will be collected and maintained as resources allow. It is not anticipated that the metadata will be collected all at once. Rather existing metadata repositories, automated population of metadata from data dictionaries, and other existing resources will be used as much as possible. A key success factor for the repository will be the maintenance and currency of the metadata once it is initially collected. Bi-directional update of metadata between the repository and data sources through automated means will help maintain the metadata and will be the preferred method of maintaining the metadata.

## 1.3 User Characteristics

The intended users of the repository include executives, managers, and developers of agency information systems.

- For executive level users, the repository acts as the basis and reference point for a variety of decision support applications, potential executive information systems, and reports. It supports planning and analysis activities by indicating data availability, data access, and data stewardship of information systems. Some of the key executive level users for the repository will be the Data Management Forum, AIO, and other agency IT executives.
- IT managers may utilize the repository to aid in planning and implementing new systems or improvements which are consistent with agency requirements. The repository will assist managers in utilizing data as a resource, and allow the most efficient access to data and promote reuse while avoiding data duplication, and non-standard database implementations. It also supports the tools and methods for effective systems integration implementations,

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which are needed to maintain an efficient and cost effective IT architecture. IT managers are IPT Leads, Project Managers, and Stewards for the systems, databases, and data elements.

- The repository will offer IT developers access to information about registered systems' data, which is crucial to building effective and robust systems. In addition to providing detailed specifications on stored data elements, the repository will enable developers to reuse the detailed specifications, will reduce data redundancies, and adhere to FAA data standards. IT developers are system and database developers that may be FAA employees or contractors.

## 1.4 Document Overview

The purpose of this document is to define the requirements to establish an enterprise-class metadata repository in the FAA. The Information Management Division within the FAA Office of Information Services and Chief Information Officer (AIO) developed the contents of this document. AIO needs to acknowledge the use and support of the staff and existing documents from the Office of Air Traffic Services (ATS), the Office of Research and Acquisitions (ARA), and The MITRE Corporation / Center for Advanced Aviation System Development (MITRE/CAASD). A key success factor and acceptance criterion for this document will be for the FAA Lines of Business (LOB's) to review, comment, and endorse it.

This document establishes the performance, design, development, test, and system integration requirements for the FAA Metadata Repository (MDR). It establishes requirements for the software architecture and its attendant design, documentation, and test of software requirements. This document contains the following sections:

- Section 1, Introduction: Identifies the scope and purpose of the FAA MDR system and of this document.
- Section 2, Referenced Documents: Lists the source documents used to prepare this document and/or those that are referenced.
- Section 3, Requirements: Specifies MDR system requirements.
- Section 4, Qualification Requirements: Defines methods to ensure each requirement has been met.
- Section 5, Notes: Includes general information and aids about the document.
- Appendix A, Glossary.

## 2 Reference Documents

The following documents were used as sources of material for the development of the requirements contained herein:

- *FAA Data Management Strategy*, Federal Aviation Administration, Office of Information Services and Chief Information Officer, Version 1.0, dated 21 September 1999.
- *FAA Information Technology Strategy*, Office of Information Services and Chief Information Officer, Version 1.0, dated 22 September 1999.

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- *IT Metadata Repository Selection Criteria and Evaluation*, Strategic Analysis Report, Gartner Group, dated 21 September 1999.
- *A Proposed Concept for Managing NAS Standards and System Metadata: The Aviation Data Description Registry (ADDR)*, MITRE Technical Report, The MITRE Corporation, Center for Advanced Aviation System Development, September 1999.
- *ATS Data Administration Plan*, Titan Software Systems, dated May 1999.
- *ATS National Data Center Volume I: Technical Architecture*, Titan Software Systems, Version 1.0, dated 30 June 1999.
- *ATS National Data Center Volume II: Metadata Repository Requirements*, Titan Software Systems, Version 1.0, dated 1 July 1999.
- *Metamodel for the Management of Shareable Data*, American National Standards Institute, ANSI X3.285, 1998.
- *Business Metadata Integration*, DM Review, September 1999, pp. 34-37.
- *Framework for the Specification and Standardization of Data Elements*, International Organization for Standardization and International Electrotechnical Commission (ISO/IEC), International Standard ISO/IEC 11179, 1998.
- *Software Requirements Specification*, Data Item Description, FAA-SE-007.

## 3 Requirements

Each requirement has been assigned a unique number within the section that the requirement falls and is provided in the first column. Each requirement statement will indicate the criticality of that requirement for the metadata repository in the criticality column. The criticality of a requirement is defined in Section 3.1 below. Each requirement will also be assigned a qualification method in the QM column. The qualification requirements and method are described in Section 4.

### 3.1 Precedence and Criticality of Requirements

The criticality will be indicated by a "1" for core requirements, which are those that must be satisfied without modification or addition to the existing functionality of the repository. Those indicated by a "2" are enhanced requirements that must be provided or added to the repository through extension, development, or a new commercially available version. Those indicated by a "3" are optionally available requirements.

### 3.2 Functional Requirements

#### 3.2.1 General Requirements

Table 3.2.1 - General Requirements			
Req #	Functional requirement	Criticality	QM
3.2.1.1	The repository shall provide access to the full functionality of the repository through a graphical user	1	D

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Table 3.2.1 - General Requirements			
Req #	Functional requirement	Criticality	QM
	interface using a Microsoft Windows 95/98 client.		
3.2.1.2	The repository shall be accessible for query, reporting and updating selected metadata via an Internet web browser.	1	D
3.2.1.3	The repository shall support relational constructs for metadata.	1	D
3.2.1.4	The repository shall support object-oriented constructs for metadata.	2	D
3.2.1.5	The repository shall have the ability to catalog and integrate technical and business metadata.	1	D
3.2.1.6	<p>The repository shall have a repository structure that meet the conceptual (if not physical) metadata repository and data registry needs of the following ongoing FAA initiatives:</p> <ul style="list-style-type: none"> <li>• ATS National Data Center (NDC) Metadata Repository</li> <li>• ASD Aviation Data Description Registry (ADDR) Pilot</li> <li>• SERC Adaptation Data Management Pilot</li> <li>• ASY National Aviation Safety Data Analysis Center (NASDAC) Data Encyclopedia</li> <li>• AFS Safety Performance Analysis System (SPAS) Data Registry</li> </ul>	1	D
3.2.1.7	<p>The repository shall be based upon and follow industry standards for metadata management. Including the following:</p> <ul style="list-style-type: none"> <li>• Definition (ISO 11179, which includes ANSI X3.285)</li> <li>• Modeling (ERD, IDEF1X)</li> <li>• Query Standards (SQL)</li> </ul>	1	D
3.2.1.8	<p>The repository shall be based upon and follow industry standards for metadata management. Including the following:</p> <ul style="list-style-type: none"> <li>• Modeling (UML)</li> <li>• Repository Standards (OIM, CWM)</li> <li>• Interchange Standards (XML)</li> <li>• OMG Meta Object Facility (MOF)</li> </ul>	2	D
3.2.1.9	The repository shall be scaleable to accommodate operational and system metadata about current systems, about systems in development, and about new systems	1	D

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**Table 3.2.1 - General Requirements**

Req #	Functional requirement	Criticality	QM
	and data standards.		

### 3.2.2 Database Inventory & Business Metadata Requirements

**Table 3.2.2 - Database Inventory & Business Metadata Requirements**

Req #	Functional requirement	Criticality	QM
3.2.2.1	The repository shall accommodate an inventory of databases and data elements of legacy critical information systems <sup>3</sup> .	1	D
3.2.2.2	The inventory shall be created and positioned to answer the following types of questions: <ul style="list-style-type: none"><li>• Who are the users of the data?</li><li>• What are the data elements and the data architecture?</li><li>• Where does the data originate and where is it used?</li><li>• Why is the data needed?</li></ul>	1	D
3.2.2.4	It shall be possible for information systems to be registered in a hierarchy.	1	D
3.2.2.5	Each information system in the repository shall be registered to have the following top-level data: <ul style="list-style-type: none"><li>• System name</li><li>• System acronym (optional)</li><li>• Description of the system and its function</li><li>• A version designator</li><li>• Organizational owner</li><li>• Date of last change</li><li>• Nature of last change</li></ul>	1	D
3.2.2.6	Each registered information system shall catalog the primary organizational customer/end-user relationships. For customer relationships, the following data shall be recorded: <ul style="list-style-type: none"><li>• Organization</li><li>• A description of the organization's relationship to this system</li></ul>	1	D
3.2.2.7	The repository shall provide the capability to represent	2	D

<sup>3</sup> Critical information systems are those systems that are determined to meet or exceed the threshold criteria established for the FAA Data Management Program.



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Table 3.2.2 - Database Inventory & Business Metadata Requirements			
Req #	Functional requirement	Criticality	QM
	relationships and other metadata in graphical, textual, and multimedia data types.		
3.2.2.8	Each information system shall map its primary data (source/customer) system interfaces using the following high level information: <ul style="list-style-type: none"> <li>• Source/consumer information system</li> <li>• Whether the interfacing system is a supplier or user (or both) of this system's data</li> <li>• The type of data/file format employed in storing/transferring the data</li> <li>• Frequency of data transfer</li> <li>• Method of data transfer</li> </ul>	1	D
3.2.2.9	Each information system shall register point(s) of contact for management and administration of the system. A system shall have a Program/Project Manager (PM) contact and may have a Systems Administrator contact.	1	D
3.2.2.10	Government contact information shall include the following: <ul style="list-style-type: none"> <li>• Full name</li> <li>• Full telephone number</li> <li>• Electronic mail (e-mail) address</li> <li>• Organization information</li> </ul>	1	D
3.2.2.11	Contractor contact information shall include the following: <ul style="list-style-type: none"> <li>• Full name</li> <li>• Full telephone number</li> <li>• Electronic mail (e-mail) address</li> </ul>	1	D
3.2.2.12	For each information system, the primary contractor (if any) supporting the system shall be captured, which shall include the following: <ul style="list-style-type: none"> <li>• Contractor organization name</li> <li>• Contract number</li> <li>• Task order number</li> <li>• A description of the contractor organization</li> <li>• A description of the tasking performed by the contractor organization</li> </ul>	1	D
3.2.2.13	Each information system shall register how end-users can access it. This will include the preferred client hardware and software and any network access that is required and will be developed from the technical metadata describing	2	D

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Table 3.2.2 - Database Inventory & Business Metadata Requirements			
Req #	Functional requirement	Criticality	QM
	the operating platform and connectivity required.		
3.2.2.14	Some information systems may be described by associating them with certain mission categories. The repository shall provide support for the maintaining the following framework/mission related information: <ul style="list-style-type: none"> <li>The established list of FAA service categories (e.g. Air Traffic, Regulation &amp; Certification, Safety, Security, Airport Management, Enterprise Management).</li> <li>The established list of mission functions for each mission category(e.g. Workforce Management, Labor Relations, Budget Execution)</li> </ul>	1	D
3.2.2.17	One or more subject area keywords (e.g., Budget, Accounting, etc.) may be associated, as functional descriptors, with any/all of the administered items.	2	D
3.2.2.18	Each subject area keyword shall be a functional descriptor, which may be comprised of a hierarchy of other subject area keywords.	2	D
3.2.2.19	For each submission, the repository shall support collection and storage of an <i>Effectiveness Questionnaire's</i> questions. Refer to <i>ATS Metadata Repository Requirements, Appendix E</i> to see a sample questionnaire.	3	D
3.2.2.20	<i>The Effectiveness Questionnaire's</i> questions shall be organized in a hierarchy of categories including the following: <ul style="list-style-type: none"> <li>Flexibility/Interoperability;</li> <li>Reliability/Maintainability;</li> <li>Availability; and</li> <li>Security.</li> </ul>	3	D
3.2.2.21	The repository shall maintain the available choice selections for questions that have responses, which are chosen from a set of discrete answers. Refer to <i>ATS Metadata Repository Requirements, Appendix E</i> to see a sample of choices in the questionnaire.	3	D
3.2.2.22	For each submission, the repository shall support storage of specific responses/choices to the <i>Effectiveness</i> questions.	3	D
3.2.2.23	For each submission, the repository shall support collection and storage of a calculated system effectiveness score. See <i>ATS Metadata Repository Requirements, Appendix E</i> for effectiveness calculation	3	D

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Table 3.2.2 - Database Inventory & Business Metadata Requirements			
Req #	Functional requirement	Criticality	QM
	requirements.		

### 3.2.3 Technical Metadata Requirements

Table 3.2.3 - Technical Metadata Requirements			
Req #	Functional requirement	Criticality	QM
3.2.3.1	The core requirements for the technical metadata shall include: <ul style="list-style-type: none"> <li>• Data nomenclature and definition</li> <li>• Data representation and structure</li> <li>• Data ownership, stewardship, and configuration control</li> <li>• Data interaction with other systems (i.e. a description of incoming and outgoing data from an application system viewpoint.</li> </ul>	1	D
3.2.3.2	The repository shall provide a centralized data dictionary capability.	1	D
3.2.3.3	The repository shall contain standard names and definitions for core data elements shared throughout the FAA.	1	D
3.2.3.4	The repository shall use standardized naming conventions consistent with ISO/IEC 11179 Framework for the Specification and Standardization of Data Elements.	1	D
3.2.3.5	Each data element in the repository shall be registered to have the following high-level identifiers: <ul style="list-style-type: none"> <li>• Primary name</li> <li>• Data identifier</li> <li>• Version identifier</li> <li>• Registration authority</li> <li>• One or more aliases (optional) or synonyms</li> <li>• Context</li> <li>• Date of last change</li> <li>• Nature of last change</li> </ul>	1	D
3.2.3.6	An entity or object class corresponds to a set of ideas, abstractions, or physical things. The repository shall record the following applicable information about each entity/object class: <ul style="list-style-type: none"> <li>• name(s);</li> </ul>	1	D

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Table 3.2.3 - Technical Metadata Requirements			
Req #	Functional requirement	Criticality	QM
	<ul style="list-style-type: none"> <li>• description;</li> <li>• length;</li> <li>• type;</li> <li>• version;</li> <li>• subject area; and</li> <li>• steward organization.</li> </ul>		
3.2.3.7	<p>Pair-wise relationships between two entities shall include the following:</p> <ul style="list-style-type: none"> <li>• cardinality (a.k.a. "multiplicity");</li> <li>• optionality (e.g., an instance of the relationship is either mandatory or optional);</li> <li>• direction of the relationship (i.e. the from - to nature); and</li> <li>• description of the relationship.</li> </ul>	1	D
3.2.3.8	<p>An attribute or property corresponds to a field, table column, or data element contained within a described entity or object class. The repository shall record the following about its attributes/properties:</p> <ul style="list-style-type: none"> <li>• name(s);</li> <li>• description;</li> <li>• default value;</li> <li>• domain selection;</li> <li>• data type/representation;</li> <li>• key type;</li> <li>• primitive indicator;</li> <li>• array type;</li> <li>• parent id;</li> <li>• version;</li> <li>• authoritative document;</li> <li>• steward organization;</li> <li>• length;</li> <li>• source system;</li> <li>• source object name;</li> <li>• a sequence order as defined within the entity and used to uniquely identify an attribute within each entity;</li> <li>• low range;</li> <li>• high range;</li> <li>• precision;</li> </ul>	1	D

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Table 3.2.3 - Technical Metadata Requirements			
Req #	Functional requirement	Criticality	QM
	<ul style="list-style-type: none"> <li>• scale;</li> <li>• units of measure;</li> <li>• level;</li> <li>• mission criticality; and</li> <li>• derivation.</li> </ul>		
3.2.3.9	<p>The repository shall support a mapping of data element in a system to an external source when its content is derived from that source. It also shall support data element(attribute) mapping to include:</p> <ul style="list-style-type: none"> <li>• source system, table, and column;</li> <li>• cleansing rules needed to resolve imported data inconsistencies;</li> <li>• any transformation rules to be applied to the imported data;</li> <li>• any applicable data exceptions;</li> <li>• data update frequency; and</li> <li>• the script name applicable to processing mapped or imported data.</li> </ul>	1	D
3.2.3.10	The repository shall support a mapping of the linkage of data elements and provide a description of the relationship.	1	D
3.2.3.11	<p>The repository shall support definition of specific technological details of the operating environment which supports each information system. These details shall include the following:</p> <ul style="list-style-type: none"> <li>• operating platforms (servers and client/desktops);</li> <li>• development, support, and maintenance software;</li> <li>• connectivity information; and</li> <li>• system architecture descriptions.</li> </ul>	1	D
3.2.3.12	<p>For each client/server platform accessing/supporting a particular system the repository shall store the following:</p> <ul style="list-style-type: none"> <li>• O/S name;</li> <li>• O/S version number;</li> <li>• type of CPU used (e.g. 80486-80, Pentium-200, Sparc2000);</li> <li>• the number of CPUs used (generally for multi-processor server platforms only);</li> <li>• minimum/typical amount of RAM needed to operate system/applications;</li> <li>• minimum/typical amount of disk storage needed</li> </ul>	2	D

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Table 3.2.3 - Technical Metadata Requirements			
Req #	Functional requirement	Criticality	QM
	to operate system; and <ul style="list-style-type: none"> <li>compact disc required.</li> </ul>		
3.1.3.13	The repository shall support storing the following additional information for each server platform supporting a system: <ul style="list-style-type: none"> <li>server name/unique identifier;</li> <li>general geophysical location (city/state, OPI, facility identifier, etc);</li> <li>server manufacturer's name;</li> <li>server model number;</li> <li>amount of currently installed RAM;</li> <li>amount of currently installed disk storage;</li> <li>whether or not software fault tolerance is employed;</li> <li>a description of the software fault tolerance implementation (if employed); and</li> <li>a description of the system's backup requirements and procedures (if any).</li> </ul>	2	D
3.1.3.14	The repository shall support storing the following additional information for (actual or recommended) client platform configurations accessing a system: <ul style="list-style-type: none"> <li>quantity of this class of configurations;</li> <li>typical video configuration (e.g., 1024x800 SVGA, 640x480 VGA, etc.);</li> <li>typical compact disc configuration; and</li> <li>descriptive text for the client/desktop configuration.</li> </ul>	2	D
3.1.3.15	The repository shall store the additional information about the software tools and software components used to develop, maintain and operate the system. This information shall include: <ul style="list-style-type: none"> <li>the product's official name;</li> <li>the software products manufacturer;</li> <li>software product's version; and</li> <li>the general function/use of the software.</li> </ul>	2	D
3.1.3.16	The repository shall support indicating both recommended minimum platform configurations, as well as actual or planned configurations.	3	D

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### 3.2.4 Reporting Requirements

Table 3.2.4 - Reporting Requirements			
Req #	Functional requirement	Criticality	QM
3.2.4.1	The repository shall be able to produce a <i>Data Accountability Report</i> showing the relationships of data stewards to systems and/or entities.	1	D
3.2.4.2	The repository shall be able to produce a <i>Database Inventory Report</i> .	1	D
3.2.4.3	The repository shall be able to produce a report to answer the following types of questions: <ul style="list-style-type: none"><li>• Who are the users of the data?</li><li>• What are the data elements and the data architecture?</li><li>• Where does the data originate and where is it used?</li><li>• Why is the data needed?</li></ul>	1	D
3.2.4.4	The repository shall have an ad hoc query capability that can be accessed using industry standard Structured Query Language (SQL).	1	D
3.2.4.5	The repository shall be capable of developing and generating standardized reports.	1	D
3.2.4.6	Any reports generated by the repository shall be exportable to a file format that is accessible to Microsoft Office Suite or other common office automation suites.	1	D

### 3.2.5 Database Inventory Conversion Requirements

Table 3.2.5 - Database Inventory Conversion Requirements			
Req #	Functional requirement	Criticality	QM
3.2.5.1	The data contained in the 1999 5 Year IRM Plan database shall be used to verify and populate the database inventory into the repository.	1	D
3.2.5.2	The data contained in the ASD NAS Architecture Capabilities and Analysis Tool Suite (CATS) shall be used to populate the repository.	1	D
3.2.5.3	The data contained in the ATS NSIP Database version 1.0 shall be used to populate the repository.	1	D
3.2.5.4	The data contained in the Y2K Inventory database shall be used to verify and populate the repository	1	D
3.2.5.5	When data for an information system exists in the 5-Year	1	D

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**Table 3.2.5 - Database Inventory Conversion Requirements**

Req #	Functional requirement	Criticality	QM
	IRM Plan, NAS CATS Database, NSIP Database, and Y2K Inventory, data shall take precedence in the order of the systems listed.		

### 3.3 External Interface Requirements

**Table 3.2 - External Interface Requirements**

Req #	Functional requirement	Criticality	QM
3.2.1	To the maximum extent possible, data entered into the repository shall be via automated data loading mechanisms.	1	D
3.2.2	The repository shall support and have data drivers or interfaces to import or export data available for most major database and database development tools in the industry. Including the following: <ul style="list-style-type: none"><li>• ORACLE</li><li>• Microsoft SQL Server</li><li>• Sybase</li><li>• Informix</li><li>• ADABAS</li><li>• DB2</li><li>• ORACLE Designer/2000</li><li>• Computer Associates ERWin</li></ul>	1	D
3.2.3	The repository shall support bi-directional interfaces to import or export data available to the tools listed in requirement 3.2.2.	2	D

### 3.4 Internal Interface Requirements

Not applicable at this time.

### 3.5 Security and Privacy Requirements

**Table 3.5 - Security Requirements**

Req #	Functional requirement	Criticality	
3.5.1	The repository shall have adequate security protections to prevent unauthorized use.	1	D
3.5.2	Access to the repository using a browser shall be have	1	D



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**Table 3.5 - Security Requirements**

Req #	Functional requirement	Criticality	
	adequate security protections to prevent unauthorized use.		

### 3.6 Configuration Management Requirements

**Table 3.6 - Configuration Management Requirements**

Req #	Functional requirement	Criticality	QM
3.6.1	The repository shall have adequate configuration management controls for items that reside in the repository.	1	D
3.6.2	The repository shall provide robust version control of the metadata contents.	1	D

### 3.7 Computer Resource Requirements

#### 3.7.1 Computer Hardware Requirements

**Table 3.8.1 - Computer Hardware Requirements**

Req #	Functional requirement	Criticality	QM
3.7.1.1	The repository shall reside on existing FAA servers which use Sun Solaris v2.6 (UNIX).	1	D

#### 3.7.2 Computer Hardware Resource Utilization Requirements

Not applicable at this time.

#### 3.7.3 Computer Software Requirements

**Table 3.7.3 - Computer Software Requirements**

Req #	Functional requirement	Criticality	QM
3.7.3.1	The repository shall use commercially available enterprise-class repository software and tools.	1	D
3.7.3.2	The repository shall allow client/server concurrent access by multiple users.	1	D

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**Table 3.7.3 - Computer Software Requirements**

Req #	Functional requirement	Criticality	QM
3.7.3.3	The repository shall be expandable and extensible.	1	D

### 3.8 Training-Related Requirements

**Table 3.8.1 - Computer Software Requirements**

Req #	Functional requirement	Criticality	QM
3.8.1.1	A printed set of user manuals shall be provided on any Commercial Off The Shelf (COTS) products used for the repository.	1	D
3.8.1.2	The vendor shall also provide administrative, user, and supporting documentation on a separate CD-ROM and provide a hypertext search engine for quickly locating topics, information, and tutorials as needed by the user for any COTS products.	1	D
3.8.1.3	Any customizations or extensions made to the repository shall be documented.	1	D
3.8.1.4	User manuals shall be accessible in electronic form.	1	D
3.8.1.5	The FAA shall have rights to copy for its use all documentation provided by the vendor.	1	D
3.8.1.6	On-line help shall be available, selectable and, to the maximum extent, be within the context of the task a user is trying to execute for the repository front-end.	1	D
3.8.1.7	On-line help shall have an index and search engine for quickly finding a subject and use hyperlinks and bookmarks to quickly display and save references to desired information.	1	D
3.8.1.8	On-line help shall be available for all tasks, functions, and features of any COTS products used.	1	D
3.8.1.9	Instructor led training for the repository or repository COTS tools shall be available for purchase from the FAA within the continental United States.	1	D

### 3.9 Other Requirements

Not applicable at this time.

## 4 Qualification Requirements

This section describes the methods and processes for ensuring each requirement has been met.

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## 4.1 Qualification Methods

Qualification methods may include:

- a. Demonstration: observable functional operation not requiring the use of instrumentation, special test equipment, or subsequent analysis.
- b. Test: using instrumentation or other special test equipment to collect data for later analysis.
- c. Analysis: processing accumulated data obtained from other qualification methods. Examples are reduction, interpretation, or extrapolation of test results.
- d. Inspection: visual examination of code, documentation, etc.
- e. Special qualification methods: any special qualification methods such as tools, techniques, procedures, facilities, and acceptance limits.

## 4.2 Acceptance Testing Requirements

Each requirement in section three shall be assigned to a qualification method. The assigned methods shall be used to verify compliance during acceptance testing.

## 5 Notes

### 5.1 Definitions for Acronyms and Abbreviations

List of Acronyms and Definitions Used	
Acronym / Term	Meaning / Definition
ABA	Office of Financial Services and Chief Financial Officer
ACS	Office of Civil Aviation Security
AHR	Office of Human Resources Management
AIO	Office of Information Services and Chief Information Officer
ARA	Office of Research and Acquisitions
ARP	Office of Airports
ATS	Office of Air Traffic Services
ASY	Office of System Safety
AVR	Office of Regulation and Certification

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CAS	Cost Accounting System
CDD	Corporate Data Dictionary
CFO	Chief Financial Officer
CIO	Chief Information Officer
CM	Configuration Management
COTS	Commercial Off The Shelf
CORBA	Common Object Request Broker Architecture
CWM	Common Warehouse Metadata
DSS	Decision Support System
DW	Data Warehouse
EDW	Enterprise Data Warehouse
EIS	Executive Information System
ERD	Entity Relationship Diagram
FAA	Federal Aviation Administration
F&E	Facilities and Equipment
FOB	Federal Office Building
GAO	General Accounting Office
GPRA	Government Performance Results Act
HTML	HyperText Markup Language
HW	Hardware
INFOSEC	Information Security
IPT	Integrated Product Team
IRM	Information Resource Management
IT	Information Technology
ITMRA	Information Technology Management Reform Act
LOB	Line of Business
MDC	Metadata Coalition
MDR	Metadata Repository
NAS	National Airspace System
NSIP	NAS Support Integration Process

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OIM	Open Information Metamodel
OMB	Office of Management and Budget
OMG	Object Management Group
OPS	Operations
R&D	Research & Development
RD	Requirements Document
SQL	Structured Query Language
UML	Unified Modeling Language
XMI	XML-based Metadata Interchange
XML	Extensible Markup Language

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## Appendix A: Glossary

**Application** – A name given to an arbitrary collection of business functions, entities, programs, and elements.

**Data** – A noun that refers to things known or assumed; facts or figures from which conclusions can be inferred; or information.

**Data Architecture** – The data architecture depicts the distribution and access mechanisms associated with data for one or more applications. It defines the standards and procedures needed to create consistent, accurate, complete, and timely data. It defines a process for rationalizing data needs across applications and determining its appropriate distribution and placement. It defines the methods for the collection and distribution of all computerized information.

**Data Dictionary** – A database for holding definitions of entities, elements/attributes, views, relationships, and other data that describes the structure of a database.

**Data Element/Attribute** – One or more elements describe an entity, and the values of those elements describe occurrences of the entity. It defines one of the pieces of information held about an entity.

**Data Management** – The process of (program for) applying a standard methodology and readily accepted principles and practices to the creation, collection, storage, retrieval, and conversion to usable business information of organizational data.

Applying rigor and discipline, for the purpose of providing usable business information, consistent, accurate, complete, timely, minimizing cost of storage and development.

**Data Model** – A representation of the things of significance to an enterprise and the relationships among those things. It portrays the underlying structure of the enterprise's data, so this can then be reflected in the structure of databases built to support it.

**Data Repository** – A repository is similar to a database and data dictionary, however it usually encompasses a comprehensive information management system environment. It must include not only descriptions of data structures (i.e. entities and elements), but also metadata of interest to the enterprise, data screens, reports, programs, and systems. Typically it includes an internal set of software tools, a DBMS, a metamodel, populated metadata, and loading and retrieval software for accessing repository data.

**Data Steward** – A data steward has the role of surrogate owner of a data element or entity for an enterprise. A data steward provides the definition and parameters of a data element or entity for the enterprise.

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**Data Warehouse** – A database system that is optimized for the storage of aggregated and summarized data across the entire range of operational and tactical enterprise activities. The data warehouse brings together several heterogeneous databases from diverse sources in the same environment. This could include data from current systems, legacy sources, historical archives, and other external sources.

**Database** – A collection of data items that have constraints, relationships, and a schema. A collection of interrelated files stored together, where specific data items can be retrieved by various applications. A collection of data arranged in groups for access and storage.

**Database Development** – Process of creating a database by applying a standard methodology for defining user requirements for, modeling, designing, developing, testing, and implementing a database application to satisfy a business need.

**Entity** - A thing of significance about which the organization wishes to hold information.

**Information Chain** – The process whereby data is created, collected, stored, retrieved, and converted to the information needed to conduct the business of an organization.

**Metadata** - Simply put, is data about data. It describes data, software services, and other components contained in the enterprise information systems. Examples of the types of metadata include standard data definitions, location and routing information, and synchronization management for distributing shared data.

**Platform** – Refers to the computer hardware on which the database is stored or resides.

**Standardization** – Process of requiring application of a standard definition and representation to a data element.